

REMARKS

Claims 1-10 and 12-31 are present in this application. Claims 6-8, 16-21, 30, and 31 had been canceled in an Examiner's Amendment of February 25, 2003. Claim 11 had also been canceled.

Claims 1, 6, 22, 23, and 25 are independent.

Claim Rejection – 35 USC 103

Claims 1-5, 9, 10, 12-15, and 22-29 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Hamada et al. (JP 04-074487 A, hereinafter Hamada). Applicants respectfully traverse this rejection.

The Office Action states that Hamada teaches all claimed elements except for the active layer (6) having a quantum well and a waveguide layer between the spacer (5) and the active layer (6). Instead the Examiner asserts that an active layer of a quantum well and a waveguide layer between the spacer layer and the active layer are extremely well known. Applicants disagree.

Hamada is directed to prevention of input dopants from penetrating into a bulk active layer. As has been admitted in the Office Action, Hamada does not teach or suggest an optical guide layer or a quantum well active layer in a semiconductor laser device. Hamada does not address the prevention of the input of dopants into an optical guide layer of a semiconductor laser.

Applicants submit that even if it could be said that a quantum well active layer and an optical guide layer would be incorporated into Hamada's active

layer, the combination would merely result in prevention of input dopants to the quantum well active layer by a nondoped clad layer. Such a configuration is shown, for example, in Figure 7 of the present application. The configuration shown in Figure 7 has a quantum well active layer 705, nondoped optical guide layers 704 and 706, and n- and p-type clad layers 703 and 707. The configuration in Figure 7 does not teach the claimed spacer layer provided between the optical guide layer and a cladding layer. Accordingly, Applicants submit that the rejection fails to establish *prima facie* obviousness.

Further with respect to the claimed thickness of the waveguide being 30 nm or 35 nm, the Office Action provides no evidence that such a range of thickness is known in the art. Instead, the Office Action states that it would have been obvious to one of ordinary skill in the art to have a thickness of the waveguide being 30 nm or 35 nm, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

To the contrary, the semiconductor laser of Yuzaburo, for example, disclosed an optical guide layer having a thickness of 100 nm. Thus, evidence shows that the claimed range was not well known in the art. Thus, Applicants submit that the rejection fails to establish *prima facie* obviousness for claim 1, as well as its dependent claims.

Furthermore, the present invention is an improvement over semiconductor laser devices such as Hamada in that it also includes an interface at the spacer layer and an optical guide layer. That interface of the spacer layer has

characteristics that are different from the rest of the spacer layer (e.g., carrier concentration; see Figure 3) which provides for improved temperature characteristics. Hamada is completely silent as to an interface at a spacer layer and an optical guide layer. Thus, at least for this additional reason, Applicants submit that the rejection fails to establish *prima facie* obviousness for claim 1, as well as independent claim 6.

The Office Action admits that Hamada fails to specifically disclose a thickness of a spacer layer. Instead, the Office Action states that it would have been obvious to one having ordinary skill in the art to have a thickness of the spacer layer being 5 nm or more but less than 10 nm, since discovering an optimum value of a result effective variable involves only routine skill in the art.

Applicants disagree at least because there is no evidence that the optimum thickness of a spacer layer in Hamada would be 5 nm or more but below 10 nm. Hamada is also completely silent with respect to thickness of a spacer layer. Therefore, at least for this reason, Applicants submit that the rejection fails to establish *prima facie* obviousness for claims 2 and 23.

With respect to claims 3, 26, and 27, Applicants submit that Hamada fails to teach or suggest the claimed specific carrier concentration of the cladding layer.

Other claims, not specifically addressed, are deemed allowable at least because Hamada fails to teach the limitations of those claims. For example, as Hamada is silent with respect to characteristics of an interface of a spacer layer,

it follows that it also does not teach or suggest a carrier concentration at an interface in the spacer layer, as recited in claims 22 and 25.

Accordingly, Applicants respectfully request that the rejection be withdrawn.

CONCLUSION

All objections and rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance and such allowance is respectfully solicited. Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert W. Downs (Reg. No. 48,222), to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit

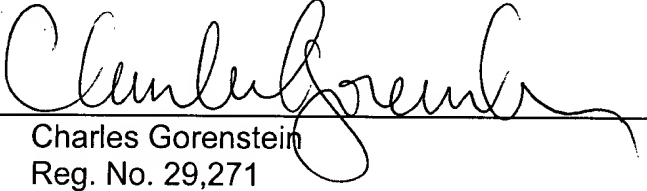
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Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or
1.17; particularly, extension of time fees.

Respectfully submitted,

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